Formulario de Arquitectura de Computadoras

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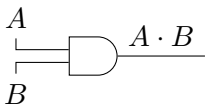
1. Algebra de Boole

$A+0=A$	$A+A=A$	$\overline{\overline{A}}=A$	$A(A+B)=A$	$\overline{(A+B)}=\overline{A}\,\overline{B}$
$A+1=1$	$A\cdot A=A$	$A+(AB)=A$	$A(\overline{A}+B)=AB$	$\overline{(A\cdot B)}=\overline{A}+\overline{B}$
$A\cdot 0=0$	$A+\overline{A}=1$	$A+(\overline{A}B)=A+B$	$\overline{A}+(AB)=\overline{A}+B$	
$A\cdot 1=A$	$A\cdot\overline{A}=0$	$(A+B)(A+C)=A+BC$		

2. Diseño

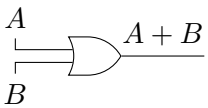
A	B	AND	OR
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	1

AND



Producto

OR



Suma

MinTerminos
Lógica positiva (Suma de productos)

$$f=\Sigma(0,1,2,3..,15)=\overline{A}\,\overline{B}\,\overline{C}\,\overline{D}+\overline{A}\,\overline{B}\,\overline{C}\,D+\overline{A}\,\overline{B}\,C\,\overline{D}+\overline{A}\,\overline{B}\,C\,D+...+A\,B\,C\,D$$

A	Log. Positiva
0	0
1	1

MaxTerminos
Lógica negativa (Producto de sumas)

$$f=\Pi(0,1,2,...,15)=(A+B+C+D)(A+B+C+\overline{D})(A+B+\overline{C}+D)...(\overline{A}+\overline{B}+\overline{C}+\overline{D})$$

A	Log. Negativa
0	1
1	0

3. Mapa de Karnaugth

ZW \ XY	00	01	11	10
00	0	4	12	8
01	1	5	13	9
11	3	7	15	11
10	2	6	14	10

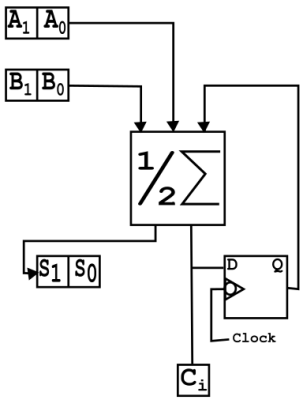
C \ AB	00	01	11	10
0	0	2	6	4
1	1	3	7	5

GH \ DEF	000	001	011	010	100	101	111	110
00	0	4	12	8	16	20	28	24
01	1	5	13	9	17	21	29	25
11	3	7	15	11	19	23	31	27
10	2	6	14	10	18	22	30	26

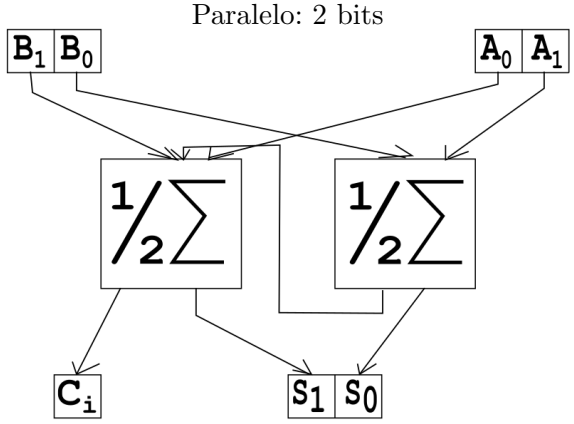
4. Sumadores

Existe dos clases de sumadores:

Serie: 2 bits



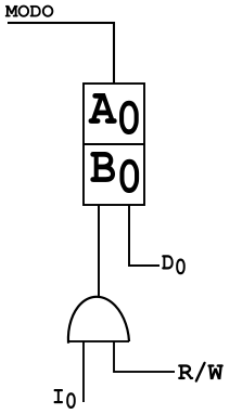
Paralelo: 2 bits



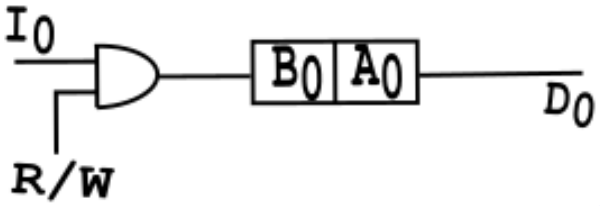
5. Memorias

Existe diferentes clases de Memorias:

LIFO 2x1



FIFO 2x1



FIFO con retroalimentación 2x2

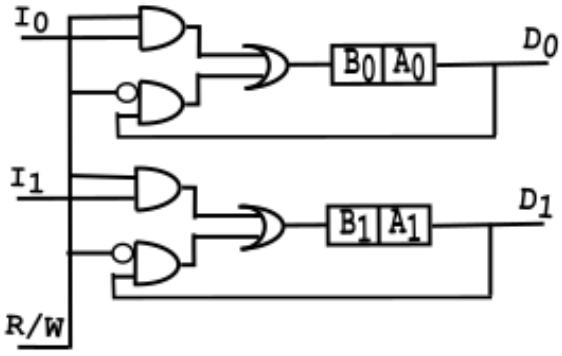


Tabla.-1

Q_k	Q_{k+1}	J	K
0	0	0	X
0	1	1	X
1	0	X	1
1	1	X	0

Tabla.-2

J	K	Q	$\overline{Q}$
0	0	Vp	$\overline{Vp}$
0	1	0	1
1	0	1	0
1	1	$\overline{Vp}$	Vp

Lineas de direccionamiento	Cantidad de palabras (byte)
1	2
2	4
3	8
4	16
5	32
6	64
7	128
8	256
9	512
10	$1024 = 1K$
$\vdots$	$\vdots$
19	512K
20	$1024K = 1M$
21	2M
22	4M
23	8M
24	16M
25	32M
26	64M
27	128M
28	256M
29	512M
30	$1024M = 1G$
$\vdots$	$\vdots$
37	128G
38	256G
39	512G
40	$1024G = 1T$
41	2T
$\cdots$	$\cdots$